UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/844,470	04/27/2001	Aamer Sachedina	CA920000004US1	1865

46369　　7590　　05/17/2005		EXAMINER	
HESLIN ROTHENBERG FARLEY & MESITI P.C. 5 COLUMBIA CIRCLE ALBANY, NY 12203		TANG, KENNETH	

ART UNIT	PAPER NUMBER
2195	

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _17 February 2005_.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-24_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-24_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All   b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   This action is in response to the Amendment filed on 2/17/05. Applicant's arguments

have been fully considered but are not found to be persuasive.

2.   Claims 1-24 are presented for examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

3.   Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable by Boland et

al. (hereinafter Boland) (US 5,826,079) in view of Jones et al. (hereinafter Jones) (US

5,812,844).

4.   As to claim 1, Boland teaches the invention substantially as claimed including a computer

system comprising:

tasks potentially contending for a latch, each task comprising *(col. 1, lines 34-37)*:

a probability determining component (affinity scheduler) to dynamically (periodically

examined and dynamic) estimate the probability (affinity) that the task will successfully acquire

the latch *(col. 1, lines 59-67, col. 2, line 22, col. 3, lines 12-13)*; and

a suspending component (sleep/wakeup facility) to place the task in a suspended state

(col. 7, lines 3-6) the estimated probability (affinity) is below a predetermined threshold value

(sleeps when under predetermined threshold, wakeup when above predetermined threshold) *(see Abstract)*.

5.   As stated above, Boland teaches that the sleep/wakeup facility will execute a sleep or wakeup based on a predetermined threshold. Boland, however, fails to explicitly teach that there is a defined sleep time. Jones teaches time-specific thread execution scheduling wherein threads are requested to sleep until a specified future wake-up time *(col. 10, lines 54-67 through col. 11, lines 1-12)*. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the feature of a defined sleep time to the existing affinity process scheduling system of Boland because this would improve Boland's affinity process scheduling system by allowing it to know exactly when the threads are awoken from sleeping *(col. 10, lines 54-67 through col. 11, lines 1-12)*.

6.   As to claim 2, Boland teaches in which the suspending component increments the defined sleep time by a heuristically determined constant factor for successive entries of the task into the suspended state *(col. 5, lines 27-30)*.

7.   As to claim 3, Boland teaches in which the sleep time is capped at a predetermined maximum value (aged and age of a process exceeds some threshold) *(col. 2, lines 13-18)*.

8.   As to claim 4, Boland teaches in which the suspending component adjusts the defined sleep time in accordance with charges in the estimated probability that the task will successfully acquire the latch *(col. 5, lines 27-30)*.

9.   As to claim 5, it is rejected for the same reasons as stated in the rejection of claim 3.

10.   As to claim 6, Boland teaches in which the suspending component bases the defined

sleep time on a predicted number of instructions executed under the latch as calculated by a

sample workload measurement *(col. 2, lines 13-21)*.

11.   As to claim 7, it is rejected for the same reasons as stated in the rejection of claim 3.

12.   As to claim 8, Boland teaches an affinity scheduler that has tasks that are contending for

a latch/lock. Boland fails to explicitly teach in which the probability determining component

estimates the probability that the task will successfully acquire the latch by taking the inverse of

the number of tasks contending for the latch. However, it would have been obvious to one of

ordinary skill in the art that the probability would be the inverse of the number of tasks

contending for the latch because this is simply using standard mathematical probability concepts.

For example, if there are two tasks for only one lock, then there is a ½ (50%) probability. If

there are three tasks for only one lock, then there is a 1/3 (33%) probability, and so on.

13.   As to claim 9, it is rejected for the same reasons as stated in the rejection of claim 1. In

addition, Boland teaches the task reporting the above a and b (from claim 1) until the

dynamically estimated probability of the task acquiring the latch is at or above the predetermined

threshold value (wakeup performed by the sleep/wakeup facility), following which the task will

contend for the latch *(col. 5, lines 5-33)*.

14.   As to claims 10-17, they are rejected for the same reasons as stated in the rejection of

claims 2-9.

15.   As to claims 18-24, they are rejected for the same reasons as stated in the rejection of

claims 2-8.

Response to Arguments

16.   During patent examination, the pending claims must be "given their broadest reasonable

interpretation consistent with the specification." *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d

1664, 1667 (Fed. Cir. 2000). Applicant always has the opportunity to amend the claims during

prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once

issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393, 1404-05,

162 USPQ 541, 550-51 (CCPA 1969).

*17.   Applicant argues on pages 3 and 4 of the Remarks that the teachings of Boland are not
relevant to the claimed invention because affinity is not equivalent to probability. Affinity means
a relation or connection to a particular processor while probability is a mathematical
determination of a chance an event will occur.*

In response, the Examiner respectfully disagrees. An affinity is a measure of the

likeliness of attraction, which reads on the broadest reasonable interpretation of probability. The

affinity is determined so that the processors can be allocated according to the affinity by the

affinity scheduler. The affinity scheduler operates on the basis of the affinity (likeliness or

probability).

18.   *Applicant argues on page 4 of the Remarks that the affinity scheduler described by*
Boland is external to the processes to be executed and would not equate to Applicant's tasks
which are potentially contending for a latch.

Boland teaches the affinity scheduler minimizing process migration between processors

to cure locking inefficiencies arising from two processes concurrently attempting to access the

same lock structure (contending for a latch) *(col. 1, lines 33-67).*

19.   *Applicant argues on page 5 of the Remarks that if Jones is combined with Boland is*
proposed, their recited invention would still not have been taught or suggested by the
combination as outlined above. As noted, neither Boland nor Jones describes providing a
probability determining component for each task potentially contending for a latch, let alone a
probability determining component which dynamically estimates the probability that the
particular task will successfully acquire the latch.

Again, an affinity is a measure of the likeliness of attraction, which reads on the broadest

reasonable interpretation of probability. The affinity is determined so that the processors can be

allocated according to the affinity by the affinity scheduler. The affinity scheduler operates on

the basis of the affinity (likeliness or probability). Boland teaches tasks potentially contending

for a latch, each task comprising *(col. 1, lines 34-37)* and a probability determining component

(affinity scheduler) to dynamically (periodically examined and dynamic) estimate the probability

(affinity) that the task will successfully acquire the latch *(col. 1, lines 59-67, col. 2, line 22, col.*

3, lines 12-13).

20.   *Applicant argues on page 5 of the Remarks that Boland does not teach the "sleep/wakeup" facility to be equivalent to the suspend component recited by Applicant. Boland does not teach placing the task in a sleep/suspend mode for any defined period of time, nor does Boland teach placing the task in a suspend or sleep mode where the probability that the task will successfully acquire a latch is below a predetermined threshold value.*

In response, the Examiner respectfully disagrees. A sleep state is a suspension from an active state. So when the sleep/wakeup facility conducts a "sleep", it is suspending from an active state. The Applicant is attacking the references individually when stating that Boland does not teach placing the task in a sleep/suspend mode for any defined period of time. For example, it teaches sleeping when below the threshold and waking up when above the threshold *(see Abstract)*. Again, an affinity is a measure of the likeliness of attraction, which reads on the broadest reasonable interpretation of probability. The affinity is determined so that the processors can be allocated according to the affinity by the affinity scheduler. The affinity scheduler operates on the basis of the affinity (likeliness or probability). Boland teaches tasks potentially contending for a latch, each task comprising *(col. 1, lines 34-37)* and a probability determining component (affinity scheduler) to dynamically (periodically examined and dynamic) estimate the probability (affinity) that the task will successfully acquire the latch *(col. 1, lines 59-67, col. 2, line 22, col. 3, lines 12-13)*.

21.   *Applicant argues on pages 5-6 of the Remarks that the combined Jones and Boland system would be significantly worse than the Boland system by itself. To implement a system such as recited in the Office Action would degrade processing since the defined step sleep time interval would have no relation to the amount of time required by the second process to complete its processing.*

In response, the Examiner respectfully disagrees. A defined sleep time interval would be a benefit to Boland because it would provide another way to know exactly when the threads are

awoken from sleeping *(col. 10, lines 54-67 through col. 11, lines 1-12)*. Jones and Boland are

both in the same field of endeavor of process scheduling and Jones does not teach away from

Boland.

22.   *Applicant argues on pages 6-7 that there is no teaching, suggestion or incentive for*
further modification of the combination as would be necessary to achieve Applicants' invention.
Neither patent teaches or suggests a probability determining component which dynamically
estimates the probability that a task will successfully acquire a latch, let alone the using of such
probability to suspend the task for a defined sleep time where the estimated probability is below
a threshold value.

Again, an affinity is a measure of the likeliness of attraction, which reads on the broadest

reasonable interpretation of probability. The affinity is determined so that the processors can be

allocated according to the affinity by the affinity scheduler. The affinity scheduler operates on

the basis of the affinity (likeliness or probability). Boland teaches tasks potentially contending

for a latch, each task comprising *(col. 1, lines 34-37)* and a probability determining component

(affinity scheduler) to dynamically (periodically examined and dynamic) estimate the probability

(affinity) that the task will successfully acquire the latch *(col. 1, lines 59-67, col. 2, line 22, col.*

3, lines 12-13).

23.   *Applicant argues on page 7 that the rejection violates the well known principle that*
Applicants' own disclosure cannot be used as a reference against them.

In response, the Applicants' own disclosure was not used to make the rejection. The

portions cited by the Examiner came only from Boland or Jones.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth Tang whose telephone number is (571) 272-3772. The examiner can normally be reached on 8:30AM - 6:00PM, Every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kt
5/11/05

MENG-AL T. AN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100